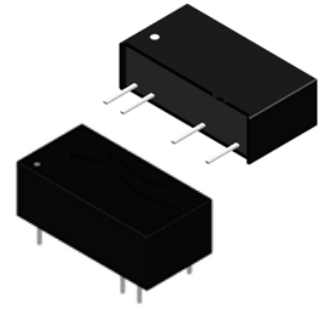


Features

- 1 Watt output power
- 1:1 input voltage range
- 1KVDC/2KVDC isolation
- -40°C to +71°C operating temperature
- SIP 7/DIP 14 package
- EN60950/EN60601
- EMC-EN55022/55024
- RoHS compliant

Application

- Input voltage range from 3.3V to 24V
- Industry control application
- Tele-communication application
- E-scooter/EV application
- Microcontroller application



Selection Guide

Part number	Input voltage	Output voltage	Output current @ full load	Efficiency ⁽¹⁾ (Typ.)	Capacitive Load ⁽²⁾ (Max.)
MSR-3.33.3J	3.3 VDC	3.3 VDC	303 mA	57%	1500µF
MSR-053.3J	5 VDC	3.3 VDC	303 mA	55%	1500µF
MSR-0505J		5 VDC	200 mA	59%	1500µF
MSR-0509J		9 VDC	111 mA	63%	680µF
MSR-0512J		12 VDC	84 mA	63%	330µF
MSR-0515J		15 VDC	66 mA	63%	330µF
MSR-0505DJ		±5 VDC	±100	54%	680µF
MSR-0509DJ		±9 VDC	±55	61%	330µF
MSR-0512DJ		±12 VDC	±42	62%	220µF
MSR-0515DJ		±15 VDC	±33	64%	220µF
MSR-123.3J		12 VDC	3.3 VDC	303 mA	57%
MSR-1205J	5 VDC		200 mA	60%	1500µF
MSR-1209J	9 VDC		111 mA	65%	680µF
MSR-1212J	12 VDC		84 mA	65%	330µF
MSR-1215J	15 VDC		66 mA	65%	330µF
MSR-1205DJ	±5 VDC		±100	52%	680µF
MSR-1209DJ	±9 VDC		±55	64%	330µF
MSR-1212DJ	±12 VDC		±42	68%	220µF
MSR-1215DJ	±15 VDC		±33	66%	220µF
MSR-153.3J	15 VDC		3.3 VDC	303 mA	59%
MSR-1505J		5 VDC	200 mA	61%	1500µF
MSR-1509J		9 VDC	111 mA	64%	680µF
MSR-1512J		12 VDC	84 mA	67%	330µF
MSR-1515J		15 VDC	66 mA	65%	330µF
MSR-1505DJ		±5 VDC	±100	56%	680µF
MSR-1509DJ		±9 VDC	±55	64%	330µF
MSR-1512DJ		±12 VDC	±42	65%	220µF
MSR-1515DJ		±15 VDC	±33	66%	220µF
MSR-243.3J		24 VDC	3.3 VDC	303 mA	57%
MSR-2405J	5 VDC		200 mA	60%	1500µF
MSR-2409J	9 VDC		111 mA	64%	680µF
MSR-2412J	12 VDC		84 mA	65%	330µF
MSR-2415J	15 VDC		66 mA	62%	330µF
MSR-2405DJ	±5 VDC		±100	55%	680µF
MSR-2409DJ	±9 VDC		±55	62%	330µF
MSR-2412DJ	±12 VDC		±42	66%	220µF
MSR-2415DJ	±15 VDC		±33	67%	220µF

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MDR-053.3J		3.3 VDC	303 mA	55%	1500μF
MDR-0505J		5 VDC	200 mA	59%	1500μF
MDR-0509J		9 VDC	111 mA	64%	680μF
MDR-0512J	5 VDC	12 VDC	84 mA	63%	330μF
MDR-0515J		15 VDC	66 mA	63%	330μF
MDR-0505DJ		±5 VDC	±100	54%	680μF
MDR-0509DJ		±9 VDC	±55	61%	330μF
MDR-0512DJ		±12 VDC	±42	65%	220μF
MDR-0515DJ		±15 VDC	±33	64%	220μF
MDR-123.3J		3.3 VDC	303 mA	57%	1500μF
MDR-1205J		5 VDC	200 mA	60%	1500μF
MDR-1209J		9 VDC	111 mA	65%	680μF
MDR-1212J	12 VDC	12 VDC	84 mA	65%	330μF
MDR-1215J		15 VDC	66 mA	65%	330μF
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MDR-1209DJ		±9 VDC	±55	64%	330μF
MDR-1212DJ		±12 VDC	±42	68%	220μF
MDR-1215DJ		±15 VDC	±33	66%	220μF
MDR-153.3J		3.3 VDC	303 mA	59%	1500μF
MDR-1505J		5 VDC	200 mA	61%	1500μF
MDR-1509J		9 VDC	111 mA	64%	680μF
MDR-1512J	15 VDC	12 VDC	84 mA	67%	330μF
MDR-1515J		15 VDC	66 mA	65%	330μF
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MDR-2412DJ		±12 VDC	±42	69%	220μF
MDR-2415DJ		±15 VDC	±33	66%	220μF

1. The efficiency is test by nominal input and max. full load at 25°C.
2. The capacitive load is test by nominal input and constant resistive load.
3. Test by nominal input and constant resistive load, the efficiency tolerance is ±3%.
4. Add "H" after P/N for isolation 2KVDC.
5. Add "P" after P/N for short circuit protection.

Part Number

M S R - 05 05 H
↓
↓
 Input voltage Output voltage

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Specifications

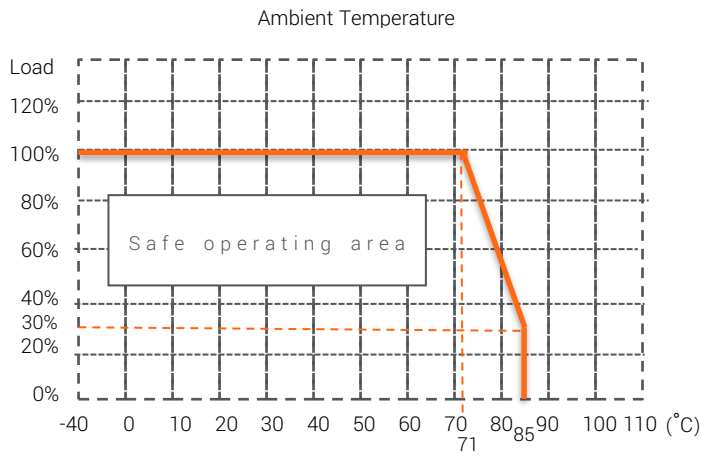
	Parameter	Conditions	Min.	Typ.	Max.	Unit	
Input	Input filter			Internal capacitors			
	Input voltage range		-5		+5	%	
Output	Voltage accuracy		-5		+5	%	
	Minimum load		0			%	
	Line regulation				1	%	
	Load regulation				1	%	
	Ripple & noise*	@20MHz BW (@Nominal Vin)			100	mVp-p	
	Operating frequency	100% load at Nominal Vin			50	KHz	
	Environment	Operating temperature		-40		71	°C
Storage temperature			-55		125	°C	
Relative humidity			5		95	%RH	
Function	Efficiency	100% Load at Nominal Vin		See selection guide			
	Capacitive Load			See selection guide			
	Isolation voltage	1 sec., Input to Output Add suffix "H"		1			KVDC
				2			KVDC
	Isolation resistance			10			GΩ
	Isolation capacitance					150	pF
	Short Circuit Protection	Option			Continuous		
	MTBF	25°C				7376*10 ³	KHours
	Vibration				MIL-STD-202G		
	Safety approvals				EN60950		
Physical	Case material			UL94V-0 black plastic			
	Potting material			Epoxy (UL94V-0)			
	Dimension			19.65 x 7.05 x 10.20 mm			
	Weight	Single			2.8		g
Dual				3.0		g	
EMC	EMI Conduction	EN55022			Class B		
	EMI Radiation	EN55022			Class B		

- All specifications valid at nominal input voltage, full load and 25°C unless otherwise stated.
- The product information and specifications are subject to change without prior notice.
- In this datasheet, all test methods are based on our corporate standards.
- "EMC filtering suggestion" is as following.
- Ripple & noise * : MDR-D suggest add one 4.7μF capacitor
- Single output has CTRL function
 Output voltage = rated at "CTRL = HIGH"
 Output voltage = rated at "CTRL = NC"
 Output voltage = 1.25V at "CTRL = LOW"

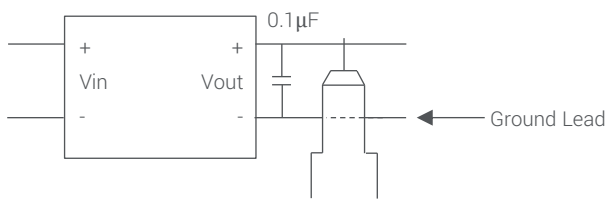
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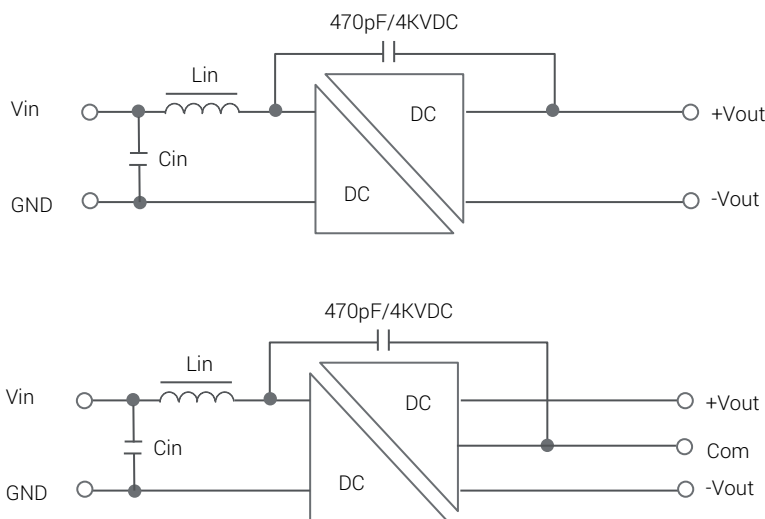
Derating Curve



Ripple & Noise Measure Method



EMI Filtering-Suggestion For Class B



*The external filter for EN55022 Class

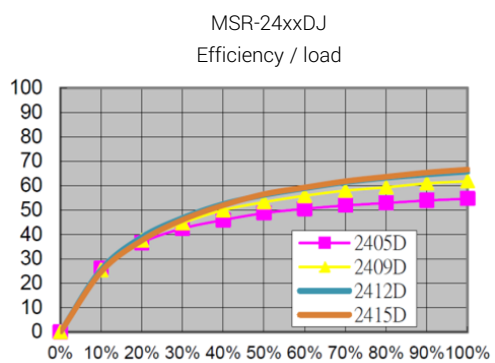
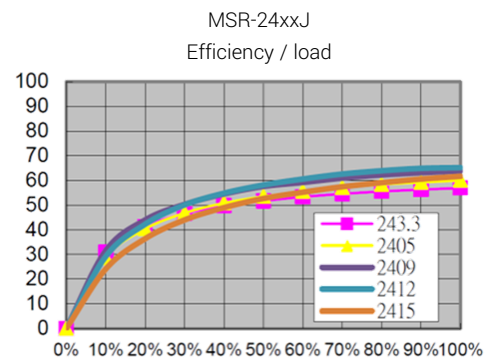
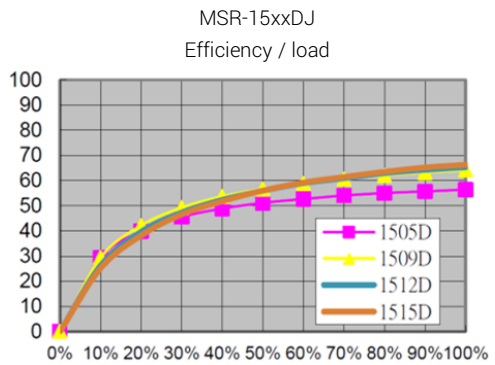
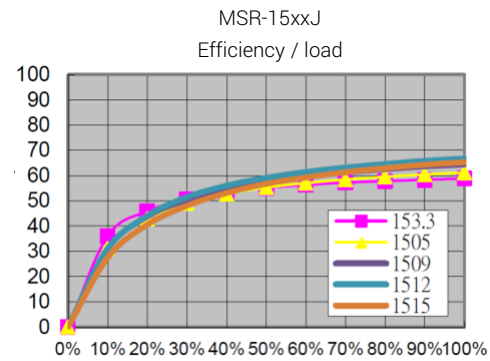
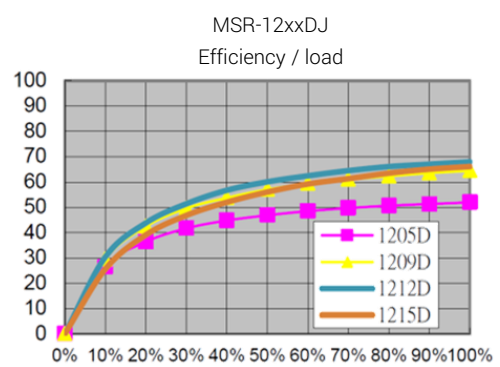
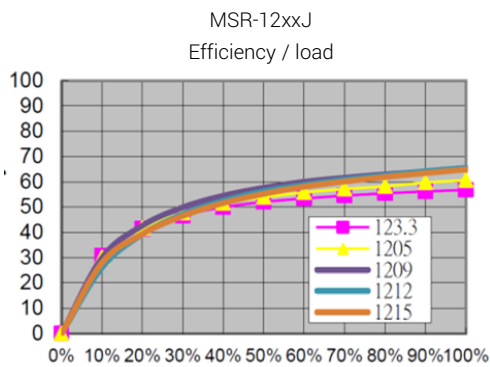
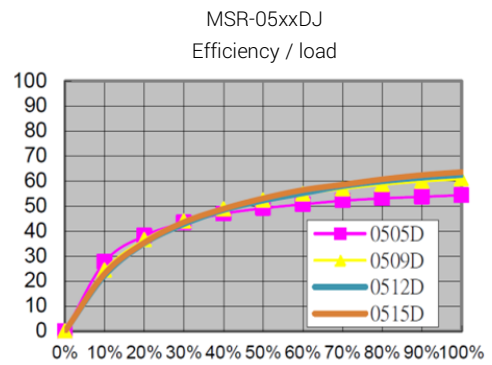
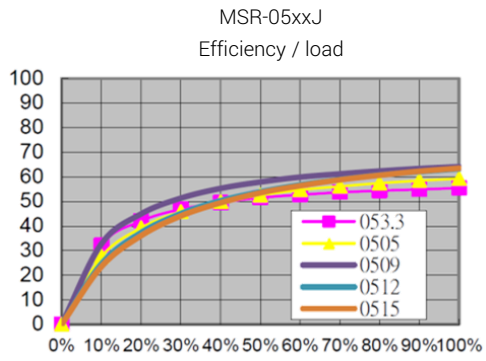
Part No.	Input voltage	Inductance/Capacitance (Lin/Cin)
MSR/MDR (Single output)	5 V	4.7µH/10µF
	12 V	22µH/4.7µF
	15 V	22µH/2.2µF
	24 V	47µH/2.2µF

Part No.	Input voltage	Inductance/Capacitance (Lin/Cin)
MSR/MDR (Dual output)	5 V	10µH/10µF
	12 V	22µH/4.7µF
	15 V	22µH/2.2µF
	24 V	47µH/2.2µF

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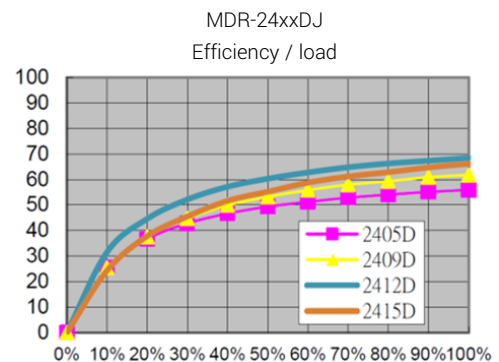
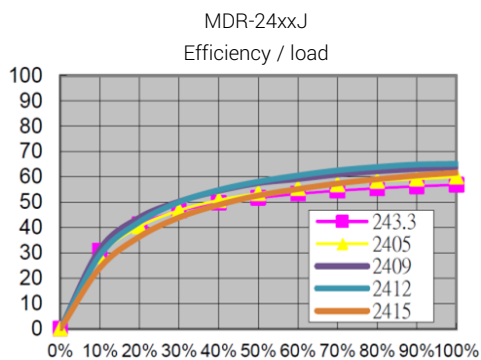
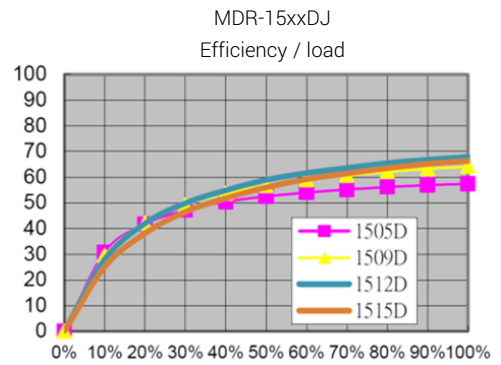
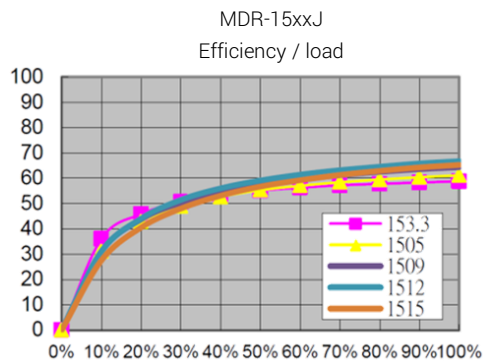
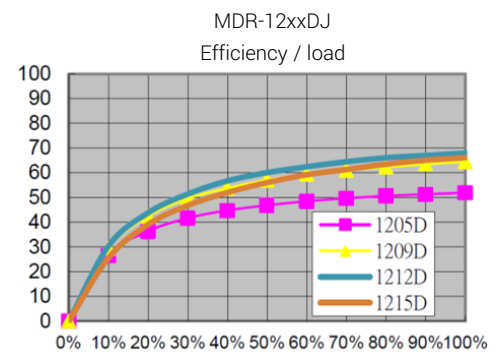
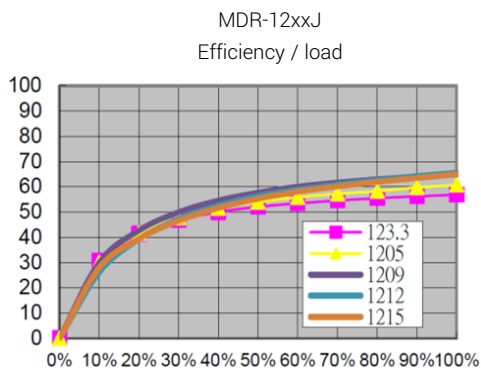
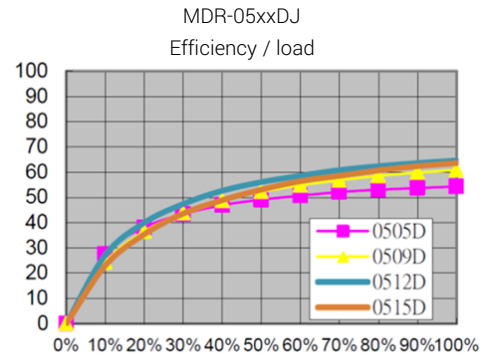
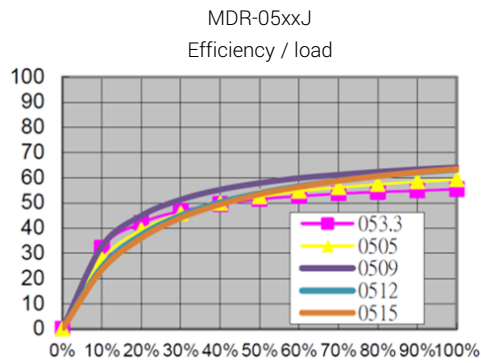
Efficiency Curve



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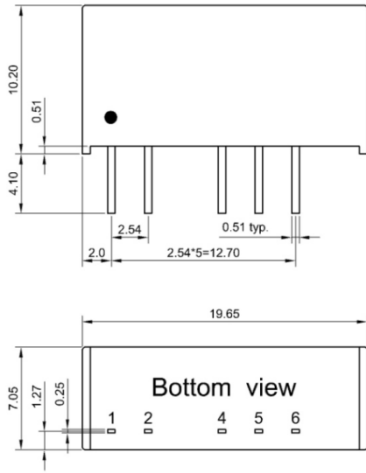
Efficiency Curve



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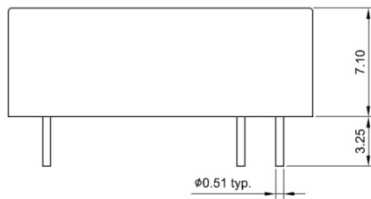
Mechanical Dimension & Pinning



Pin	MSR	
	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
4	-Vout	-Vout
5	CTRL	Com
6	+Vout	+Vout

Unit: mm

ToL. : ±0.25 m

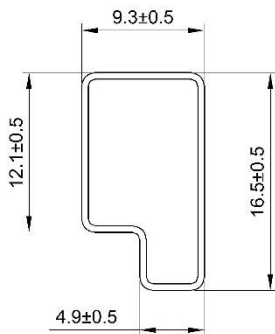


Pin	MDR	
	Single	Dual
1	-Vin	-Vin
6	No Pin	+Vout
7	No Pin	Com
8	No Pin	-Vout
9	+Vout	Com
10	CTRL	No Pin
11	-Vout	No Pin
14	+Vin	+Vin

Unit: mm

ToL. : ±0.25 m

Package



UNIT:mm
1 Tube = 25 pcs
Length:520±2mm

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